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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,417	11/10/2005	Gareth David Huntley Shaw	050446PCTUS	3622

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EXAMINER
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LEONARD, KERRY W

ART UNIT	PAPER NUMBER
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3676

DATE MAILED: 12/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/538,417

Applicant(s)

SHAW ET AL.

Examiner

Kerry W. Leonard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>0-28-06</u> | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 15 is objected to because of the following informalities. The phrase "A method for increasing oil recovery from an oil reservoir in which *method* gas is injected..." is unclear. It was not known whether or not "method gas" was intended in the above preamble or if it should appear as "A method for increasing oil recovery from an oil reservoir in which gas is injected...". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 16 and 25 recite the limitation "syngas" in the claim. There is insufficient antecedent basis for this limitation in the claims.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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5. Claims 15-17, 20, 24-26 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by PARSLEY (US 2004/0244973 A1).

With respect to claim 15, the reference discloses a method for increasing oil recovery from an oil reservoir in which method gas is injected into the reservoir, comprising the steps of separation of air into an oxygen-rich fraction and a nitrogen rich fraction, providing a natural gas stream and leading the natural gas stream and at least a part of the oxygen rich fraction to a reformer for conversion to synthesis gas mainly comprising  $H_2$ , CO,  $CO_2$  and lower amounts of non-converted methane, water vapor, and nitrogen; formation of higher hydrocarbons from the synthesis gas in a synthesis unit; withdrawing raw synthesis products and a waste gas from the synthesis unit; and injecting the nitrogen-rich fraction and at least a part of the waste gas into the oil reservoir to increase the oil recovery from the reservoir (paragraphs 0016, 0025, 0037). With respect to claim 16, the reference discloses that steam or water generated during at least one of the syngas production and synthesis is injected into the reservoir (paragraph 0043).

With respect to claim 17, the reference discloses a plant for providing gas for downhole injection for pressure support in an oil reservoir for recovering of hydrocarbons and production of oxygenated hydrocarbons or higher hydrocarbons from natural gas, comprising: an air separation unit for production of an oxygen-rich fraction for supply to processes that require oxygen, and a nitrogen-rich fraction for injection; a reformer for conversion of a mixture of natural gas, water and oxygen or oxygen enriched air from the air separation unit

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into a synthesis gas comprising mainly  $H_2$ , CO,  $CO_2$  and small amounts of methane in addition to any inert gas, such as nitrogen; a synthesis unit for conversion of the synthesis gas for synthesis of higher hydrocarbons; means for injecting gas into the reservoir; means for transferring nitrogen from the air separation unit to the means for injecting gas; and means for transferring at least a part of a waste gas from the synthesis unit to the means for injecting gas (paragraphs 0016, 0025, 0037). With respect to the depending claim 20, the reference discloses that the synthesis unit comprises one or more once-through Fischer-Tropsch units for synthesis of higher hydrocarbons (paragraph 0037).

With respect to claim 24, the reference discloses a method for increasing oil recovery from an oil reservoir in which method gas is injected into the reservoir, comprising the steps of: supplying of compressed air, providing a natural gas stream and leading the natural gas stream and at least a part of the air stream to a reformer for conversion to synthesis gas mainly comprising  $N_2$ ,  $H_2$ , CO,  $CO_2$  and lower amounts of non-converted methane, and water vapor, formation of higher hydrocarbons from the synthesis gas in a synthesis unit, withdrawing raw synthesis products and a nitrogen rich waste gas from the synthesis unit, and injecting at least a part of the nitrogen-rich waste gas into the oil reservoir to increase the oil recovery from the reservoir (paragraphs 0016, 0025, 0037). With respect to claim 25, the reference discloses that steam or water generated during at least one of the syngas production and synthesis is injected into the reservoir (paragraph 0043).

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With respect to claim 26, the reference discloses a plant for providing gas for downhole injection for pressure support in an oil reservoir for recovering of hydrocarbons and production of oxygenated hydrocarbons higher hydrocarbons from natural gas, comprising: an air compression unit for production of compressed air for supply to processes that require air; a reformer for conversion of a mixture of natural gas, water and air from the air compression unit into a synthesis gas comprising mainly  $N_2$ ,  $H_2$ ,  $CO$ ,  $CO_2$  and small amounts of methane; a synthesis unit for conversion of the synthesis gas for synthesis of higher hydrocarbons; means for injecting gas into the reservoir; and means for transferring at least a part of the nitrogen rich waste gas from the synthesis unit to the means for injecting gas (paragraphs 0016, 0037, 0025). With respect to claim 29, the reference discloses that the synthesis unit comprises one or more once-through Fischer-Tropsch units for synthesis of higher hydrocarbons (paragraph 0037).

6. Claim 15-32 are rejected under 35 U.S.C. 102(e) as being anticipated by OLSVIK (US 2006/0231455 A1).

With respect to claim 15, the reference discloses a method for increasing oil recovery from an oil reservoir in which method gas is injected into the reservoir, comprising the steps of separation of air into an oxygen-rich fraction and a nitrogen rich fraction, providing a natural gas stream and leading the natural gas stream and at least a part of the oxygen rich fraction to a reformer for conversion to synthesis gas mainly comprising  $H_2$ ,  $CO$ ,  $CO_2$  and lower amounts

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of non-converted methane, water vapor, and nitrogen; formation of higher hydrocarbons from the synthesis gas in a synthesis unit; withdrawing raw synthesis products and a waste gas from the synthesis unit; and injecting the nitrogen-rich fraction and at least a part of the waste gas into the oil reservoir to increase the oil recovery from the reservoir (paragraphs 0021-0029). With respect to claim 16, the reference discloses that steam or water generated during at least one of the syngas production and synthesis is injected into the reservoir.

With respect to claim 17, the reference discloses a plant for providing gas for downhole injection for pressure support in an oil reservoir for recovering of hydrocarbons and production of oxygenated hydrocarbons or higher hydrocarbons from natural gas, comprising: an air separation unit for production of an oxygen-rich fraction for supply to processes that require oxygen, and a nitrogen-rich fraction for injection; a reformer for conversion of a mixture of natural gas, water and oxygen or oxygen enriched air from the air separation unit into a synthesis gas comprising mainly  $H_2$ ,  $CO$ ,  $CO_2$  and small amounts of methane in addition to any inert gas, such as nitrogen; a synthesis unit for conversion of the synthesis gas for synthesis of higher hydrocarbons; means for injecting gas into the reservoir; means for transferring nitrogen from the air separation unit to the means for injecting gas; and means for transferring at least a part of a waste gas from the synthesis unit to the means for injecting gas (paragraphs 0021-0029). With respect to the depending claims, the reference discloses that the plant additionally comprises a tail gas treatment unit for removing  $CO$  by a shift reaction and separating  $H_2$  from the remaining tail gas

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(paragraph 0059); a means for transferring the remaining tail gas from the tail gas treatment unit to the means for injecting gas (paragraphs 0059-0061); that the synthesis unit comprises one or more once-through Fischer-Tropsch unit for synthesis of higher hydrocarbons; a means for introducing all or parts of the separated hydrogen from the tail gas treatment unit into the Fischer Tropsch loop to adjust the  $H_2/CO$  ratio to a desired level (paragraph 0066).

With respect to claim 24, the reference discloses a method for increasing oil recovery from an oil reservoir in which method gas is injected into the reservoir, comprising the steps of: supplying of compressed air, providing a natural gas stream and leading the natural gas stream and at least a part of the air stream to a reformer for conversion to synthesis gas mainly comprising  $N_2$ ,  $H_2$ ,  $CO$ ,  $CO_2$  and lower amounts of non-converted methane, and water vapor, formation of higher hydrocarbons from the synthesis gas in a synthesis unit, withdrawing raw synthesis products and a nitrogen rich waste gas from the synthesis unit, and injecting at least a part of the nitrogen-rich waste gas into the oil reservoir to increase the oil recovery from the reservoir (paragraphs 0021-0029). With respect to claim 25, the reference discloses that steam or water generated during at least one of the syngas production and synthesis is injected into the reservoir.

With respect to claim 26, the reference discloses a plant for providing gas for downhole injection for pressure support in an oil reservoir for recovering of hydrocarbons and production of oxygenated hydrocarbons higher hydrocarbons from natural gas, comprising: an air compression unit for production of



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compressed air for supply to processes that require air; a reformer for conversion of a mixture of natural gas, water and air from the air compression unit into a synthesis gas comprising mainly  $N_2$ ,  $H_2$ ,  $CO$ ,  $CO_2$  and small amounts of methane; a synthesis unit for conversion of the synthesis gas for synthesis of higher hydrocarbons; means for injecting gas into the reservoir; and means for transferring at least a part of the nitrogen rich waste gas from the synthesis unit to the means for injecting gas (paragraphs 0021-0029). With respect to the depending claims, the reference discloses that the plant additionally comprises a tail gas treatment unit (paragraph 0059); a means for transferring the remaining tail gas from the tail gas treatment unit (paragraph 0059-0061); and that the synthesis unit comprises one or more once-through Fischer-Tropsch units for synthesis of higher hydrocarbons; and a means for introducing all or parts of the separated hydrogen from the tail gas treatment unit into the Fischer Tropsch loop to adjust the  $H_2/CO$  ratio to a desired level.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kerry W. Leonard whose telephone number is 571-272-8133. The examiner can normally be reached on Monday-Friday, 9:00am-5:00pm.

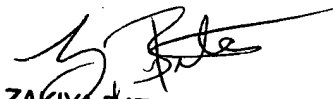
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian E. Glessner can be reached on 571-272-6843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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